UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,593	04/09/2004	Richard Alan Morgal	MORGAL-11-CIP	1563

7590 11/26/2007

William C. Boling, Esq.
5656 Hamill Avenue
San Diego, CA 92120

EXAMINER	
HALL, ASHA J	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
11/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/821,593	MORGAL, RICHARD ALAN	
	Examiner	Art Unit	
	Asha Hall	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 15 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The amended portion in claim 15 second line that states "such that target light uniformity is less severely degraded" is new matter and not previously described in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 15-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Genequand et al. (4,238,246).

In regard to claim 15, Genequand et al. discloses a lens device (11) for directing light to a solar energy collection device (col.3; lines: 6-9), the lens device (11) comprising an overall light-receiving region (11,19) configured to receive incident light along predefined paths in Figure 1, the overall light-receiving region (11,19) including a plurality of light-receiving sub regions/slats (39) that each receive incoming sub region/slats (39) light with a predefined relative density distribution along predefined paths (Figure 1), wherein each sub region/slats is configured to disperse the incoming sub region light with substantially uniform density over an entirety of the same corresponding finite energy area collection target region (col.2; lines:17-22). Genequand et al. discloses that the sub regions/slats are configured such that the light is delivered uniformity by following the movement of the sun (col.2; lines: 52-59) and that the target light uniformity is provided by constructing the slats of different widths to prevent shadowing (prevent severe degradation) (col.3; lines: 44-46).

With respect to claim 16, Genequand et al. further discloses that the predefined paths for received light are all substantially parallel (as shown in Figure 1) to a single received-light axis, and the predefined relative density distribution of the received light for each sub region is substantial equality over an entirety of the sub region (Figure 1).

In regards to claim 17, Genequand et al. further discloses that the lens is a secondary lens configured to receive light incident to a first portion of the lens (11,15) that is substantially non-parallel (Figure 1) to light received incident to a different second portion of the lens (11,17).

With respect to claim 18, Genequand et al. discloses each sub region (39) has borders (13) that are substantially parallel to a corresponding border of the energy collection target region/inner conduit (27) (col.3; lines: 6-9).

With regard to claims 19-21, Genequand et al. discloses a plurality of different sub regions (39) that are each configured to direct light arriving along an expected path as shown in Figure1 toward a corresponding different sub target/axis (A) that is a portion less than a whole of the energy collection target region (27). There are two different sub regions (15,17) that are not adjacent in a length direction direct light to two different corresponding sub targets (31,27) that are adjacent in the length direction (Figure1). With respect to claim 21, he discloses that there is a plurality of discontinuous sub regions (39) (col.2; lines: 42-43) configured to direct expected incident light toward a specific common sub target/axis A that is a portion less than a whole of the energy collection target region/inner conduit (27) (col.3; lines: 7-9).

With respect to claims 22 and 23, it has been anticipated by Genequand et al. that each sub region is a tile/ slide assemblies (15,17), and adjacent tiles/ slide assemblies (15,17) are offset from each other with respect to an expected shadow line (col.2; lines: 17-22). Wherein each sub region is a tile/ slide assemblies (15,17) and each tile/slide assemblies (15,17) includes a plurality of Fresnel facets/slats (39) (col.2; lines: 39-42).

With respect to claims 24-26,Genequand et al. discloses each sub region/slide assembly (19) is a tile having a length that is L_T times a length of the energy collection target region/ inner conduit (27) and a width that is W_T times a

width of the energy collection target region/ inner conduit (27), and L_T is not equal to W_T. The W_T of the lens is less than unity/a fraction of the total width, and light entering each sub region/slide assembly (19) in parallel diverges such that the light as shown in Figure 1 is distributed substantially uniformly across a full corresponding greater width of the energy collection target region/ inner conduit (27) as shown in Figure 1.

With respect to claims 27 and 28, Genequand et al. discloses a method of directing light to a solar energy collection device (col.1; lines: 21-29) to reduce inefficiencies caused by shadowing a portion of an overall light receiving region that is configured to direct such light to a solar energy collection device target (col.2; lines: 17-24), the method comprising:

(a.) configuring a lens (11) to direct light incident on an overall light-receiving region toward a solar energy collection device target region/inner conduit (27) having a finite extent that is substantially smaller than the overall light-receiving region/outer conduit (31);

(b.) configuring a plurality of light-receiving sub regions (39) of the overall light-receiving region to each individually receive light along expected paths (Figure 1) with an expected relative intensity distribution over such sub region (39); and

(c.) configuring each of the light-receiving sub regions (39) to disperse such received light with substantially uniform density over substantially an entirety of the solar energy collection device target region/inner conduit (27).

(d.) the lens (11) is configured to receive light substantially parallel to an incoming light axis over the overall light-receiving region (23), the expected paths for each sub region (39) are substantially parallel to the incoming light axis, and the expected relative intensity distribution over each sub region (39) is substantially uniform (Figure 1).

With respect to claim 29, Genequand et al. discloses each sub region (39) to have borders (13) that are substantially parallel to a corresponding border of the energy collection device target (27).

In regard to claims 30 and 31, Genequand et al. discloses a multiplicity of different discontinuous sub regions/slats (39) within each sub region (39), and e) configuring each of the sub regions/slats (39) to direct light incident thereon, following the expected path for the corresponding sub region (39), toward a corresponding different specific sub target/axis A (col. 2; lines: 52-55) that is a portion less than a whole of the energy collection device target (27).

With respect to claim 32, Genequand et al. discloses that each sub region is a tile/ slide assemblies (15,17) and each tile/slide assemblies (15,17) includes a plurality of Fresnel facets/slats (39) (col.2; lines: 39-42).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4, 7-10, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cluff (4,771,764) in view of Laing et al. (US Patent 5,445,177).

In regard to claim 1, Cluff discloses a solar converter apparatus for converting incoming light to electricity (col.5; lines: 30-35) in Figure 1, comprising:

a) a support structure (32) for floating on a liquid bath (34), the structure having:

i) a substantially fixed relationship to an incoming light axis that is parallel to useful incoming light (col.4; lines: 39-51);

ii) motor (45) rotates an elevation rotation axis/moving mechanism at a fixed azimuth alignment angle (col. 4; lines: 63-68) from the incoming light axis, the support structure being rotatable/pivot about the elevation rotation axis (col.4; lines: 52-58), and

iii) depicted in Figure 13 and 14 are guidance interface (32) features connecting the support structure/system of connecting rods to a guidance frame (63) that aligns the elevation rotation axis (64) at the fixed azimuth alignment angle to an azimuth of the source of incoming light/solar tracking, and that provide a rotation reference for the support structure (63) rotation about the elevation

rotation axis (64) to align the incoming light axis with the source of incoming light/solar tracking (col.6; lines:40-47);

b) depicted in Figure 1 is at least one photovoltaic conversion device (42) mounted within the support structure (32) and adapted for converting concentrated sunlight into electricity (col.5; lines: 52-56); and

c) a lens (33) coupled to the support structure for guiding light that is parallel to the incoming light axis in Figure 1 and is received over a receiving region (40) toward a conversion device (42) that is mounted within the support structure (32), the conversion device (42) having an active area/solar cells (43) that is smaller than an area of the receiving region (40) (col.1; lines: 56-60).

Cluff disclose the liquid bath/pool (34) (col.3; lines: 44-47) that is in contact with an exterior of the support structure (32) (Figure 1 & col. 3; lines: 21-26), but fails to disclose the liquid bath as the coolant.

Laing et al. discloses a platform for solar power converting device as shown in Figure 1 (col. 1; lines: 7-10) and further discloses that waste heat can be absorbed by the water of the liquid layer/liquid bath and transferred to a heat exchanger and then cooling water/coolant can be fed via an open trough running along the periphery of the platform through a distributing system into the energy converting device (col.3; lines: 10-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the liquid bath/water layer as the coolant as taught by Laing et al. to the solar converter

device of Cluff in order to transfer the waste heat absorbed by the water to a heat exchanger and then send cooling water back into the energy converting device.

With respect to claim 2, Cluff discloses that the liquid bath (34) in Figure 1, wherein the photovoltaic mounting (43) which is encapsulated the lens structure (40) is on an inside of an exterior wall as shown in Figure 1 & 4, that in operation is in contact with the liquid bath/pool (34) at a point directly transverse the wall from a point of the mounting as shown in Figure 1.

With respect to claim 3, Cluff discloses that the support structure (32) is a first support structure (32), and is disposed in contact with a liquid bath (34) in an array of support structures (40), substantially abutting adjacent support structures(40) that each have an elevation rotation axis parallel to and in a plane with the elevation rotation axis of the first support structure (32) in Figure 1.

With respect to claim 4, Cluff discloses that the light parallel to the incoming light axis that enters with uniform density across an entire surface of the lens exits the lens at angles/orienting with respect to the incoming light axis (col.1; lines: 56-69), an average of all such exiting light angles defining a light delivery axis, the light delivery axis having a significant non-zero angle with respect to the incoming light axis (col.4; lines: 66-69) in Figure 1.

In regard to claim 7, Cluff discloses that the incoming light axis is aligned with a light source elevation angle in Figure 1, and the support structure (32) floats in a coolant bath (34) that has an average surface plane (iv) a device (43) mounting site within the support structure (32), upon which a photovoltaic

converter device (46) is mounted, which during operation is below the coolant bath (34) average surface plane for all light source elevation angles within 45 degrees from vertical in Figure 13 oriented at 45.

With respect to claim 8, Cluff discloses the method of collecting incoming light for conversion to electricity (col.5; lines: 30-35), comprising:

a) mounting a conversion device (43) at a mounting site within a support structure (32) having an elevation rotation axis;

b) coupling a lens (33) to the support structure (32) to concentrate and guide incident light arriving parallel to an incoming light axis toward the conversion device (43);

c) floating the support structure (32) on a liquid bath (34);

d) aligning the support structure (32) so that the elevation rotation axis (35, 45) is at an azimuth alignment angle with respect to a source of light energy (col.4; lines: 54-58); and

e) rotating the support structure (32) about the elevation rotation axis to align the incoming light axis toward the source of light energy (col.6; line: 3-10).

Cluff discloses the water cooled photovoltaic panels as the liquid bath (34) that is in contact with an exterior of the support structure (32) (Figure 1 & col. 3; lines: 21-26), but fails to discloses that the liquid bath provides for cooling of the conversion device (34).

Laing et al. discloses a platform for solar power converting device as shown in Figure 1 (col. 1; lines: 7-10) and further discloses that waste heat can be absorbed by the water of the liquid layer/liquid bath and transferred to a heat exchanger and then cooling water/coolant can be fed via an open trough running along the periphery of the platform through a distributing system into the energy converting device (col.3; lines: 10-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the liquid bath/water layer as the coolant as taught by Laing et al. to the solar converter device of Cluff in order to transfer the waste heat absorbed by the water to a heat exchanger and then send cooling water back into the energy converting device.

In regard to claim 9, Cluff discloses wherein the support structure (32), lens (33) and conversion device (43) are part of a first collection pontoon/floats and the liquid bath (34) is a coolant bath having an average surface plane in Figure 1 comprising: cooling the conversion device (43) primarily through thermal contact between the liquid bath (34) and an exterior of the support structure (32). Cluff also discloses the wall (49) having an interior (as shown in Figure 1& 4) upon which the conversion device(43) is mounted opposite an expected area of contact with the liquid bath(34), such that in operation at least one line perpendicular to the wall traverses the conversion device (43) mounting on an immediate inside of the wall (Figure 4) and the liquid bath (34) on an immediate outside of the wall (49) (col.6; lines: 3-10).

With respect to claim 10, Cluff discloses the first collection pontoon/floats in an array (40) with adjacent collection pontoons/floats that each has an elevation rotation axis (45) parallel to and in a plane with the elevation rotation axis (45) of the support structure (32) of the first collection pontoon/floats (col.4; lines: 39-41).

In regard to claim 13, Cluff discloses positioning the conversion device (43) mounting site below the coolant bath (34) average surface plane for all light source elevation angles within 45 degrees from vertical as showing Figure 13.

With respect to claim 14, Cluff discloses incorporating a light source direction sensor within each pontoon (col.4; lines: 58-64).

7. Claims 5, 6, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cluff (4,771,764) and Laing et al. (US Patent 5,445,177) as applied to claim 1 above, and in further of view Genequand et al. (4,238,246).

In regard to claim 5, Cluff discloses the solar converter apparatus with a lens (Figure 1) as in claim 1 above, but fails to disclose the receiving region of the lens with a shadow toleration mechanism.

Genequand et al. discloses a photovoltaic conversion device (col.1; lines: 31-36) with a Fresnel lens (col.1; lines: 39-49), and further discloses the receiving region of the lens (11) with a shadow toleration mechanism (col. 2; lines: 6-23) that coordinates light entering through the lens with target photovoltaic conversion device to avoid substantially non-uniform illumination of operating photovoltaic conversion devices due to such shadowing. Genequand et

al. teaches that in order to obtain greater concentration of solar energy adjacent to the Fresnel lenses on each side, as set of reflective slates termed a slide assembly so as to reflect incident solar rays onto the same focus as the focus of the Fresnel lens, and are spaced from each other in such a way so as to not shadow the adjacent slide which is inclined at a slightly different angle (col.2; lines: 11-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Fresnel lens as a set of slats inclined at an angle of Genequand et al. to the solar conversion device of Cluff in order to obtain greater concentration of solar energy.

In regard to claim 6, Cluff discloses the solar converter apparatus with a lens (Figure 1) as in claim 1 above, but fails to disclose a plurality of sub regions of the lens to target photovoltaic conversion device. Genequand et al. discloses a photovoltaic conversion device (col.1; lines: 31-36) with a Fresnel lens (col.1; lines: 39-49), and further discloses a plurality of sub regions/slats (39) of the lens that each receive light substantially parallel (Figure 1) to the incoming light axis over a corresponding receiving sub region/slats (39), wherein each sub region/slat (39) is configured to disperse the received light substantially uniformly over an entire surface of at least one corresponding target photovoltaic conversion device/ inner conduit (27). Genequand et al. teaches that in order to obtain greater concentration of solar energy adjacent to the Fresnel lenses on each side, as set of reflective slates termed a slide assembly so as to reflect incident solar rays onto the same focus as the focus of the Fresnel lens, and are spaced from each other in such a way so as to not shadow the adjacent slide

which is inclined at a slightly different angle (col.2; lines: 11-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Fresnel lens as a set of slats inclined at an angle of Genequand et al. to the solar conversion device of Cluff in order to obtain greater concentration of solar energy.

In regard to claim 11, Cluff discloses the solar converter apparatus with a lens (Figure 1) as in claim 8 above, but fails to disclose light delivery axis of the lens.

Genequand et al. discloses a light delivery axis (Figure 1) and has an angle with respect to the incoming light axis that is equal to an average angle of light exiting the lens when such light entered the lens parallel to the incoming light axis and uniformly distributed over an entire surface of the lens (Figure 1). Genequand et al. further discloses in his Figure the lens to have the light delivery axis at a significantly non-zero angle with respect to the incoming light axis. Genequand et al. teaches that in order to obtain greater concentration of solar energy adjacent to the Fresnel lenses on each side, as set of reflective slates termed a slide assembly so as to reflect incident solar rays onto the same focus as the focus of the Fresnel lens, and are spaced from each other in such a way so as to not shadow the adjacent slide which is inclined at a slightly different angle (col.2; lines: 11-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Fresnel lens as a set of slats inclined at an angle of Genequand et al. to the solar conversion device of Cluff in order to obtain greater concentration of solar energy.

In regard to claim 12, Cluff discloses the solar converter apparatus with a lens (Figure 1) as in claim 8 above, but fails to disclose a multiplicity of receiving sub regions that receive light and disperse the light uniformly over the entire surface of the target conversion device.

Genequand et al. discloses the lens (11) has a light receiving region, further comprising a multiplicity of receiving sub regions/slats (39) (col. 3; lines: 32-38) that each receive light arriving parallel to the incoming light axis, and that each disperse such received light substantially uniformly over an entire surface of a target conversion device/ inner conduit (27). Genequand et al. teaches that in order to obtain greater concentration of solar energy adjacent to the Fresnel lenses on each side, as set of reflective slates/multiplicity of sub regions (termed a slide assembly) so as to reflect incident solar rays onto the same focus as the focus of the Fresnel lens, and are spaced from each other in such a way so as to not shadow the adjacent slide which is inclined at a slightly different angle (col.2; lines: 11-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Fresnel lens as a set of slats inclined at an angle of Genequand et al. to the solar conversion device of Cluff in order to obtain greater concentration of solar energy.

8. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Genequand et al. (4,238,246) as applied to claim 27 above, and in further view of Hein et al. (4,139,286).

Genequand et al. discloses a solar tracking apparatus with concentrating lens (col. 1; lines: 5-10), but fails to disclose primary and secondary lens. Hein et

40) and further discloses a primary lens (10) between the secondary lens (16) in order to collect a source of solar energy/parallel beam of rays (20) as shown in Figure 1 (col. 4; lines: 37-41). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the secondary and primary lenses of Hein to the solar tracking apparatus of Genequand et al. in order to collect a source of parallel beam of solar rays.

Response to Arguments

<u>Claim Objections</u>

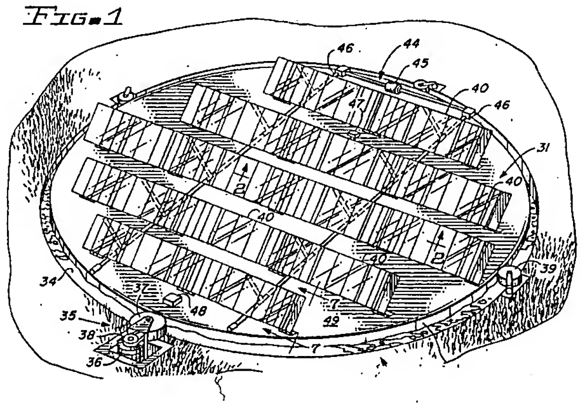
1. Due to the Applicant's amendments, the objection to the claims 2-7 and 9-13 are withdrawn.

<u>Claim Rejections under 35 USC 102 (b)</u>

2. Applicant's arguments with respect to claim 1, 2, 8, 9, and 15 have been considered but are moot in view of the new ground(s) of rejection as presented above.

3. With respect to claim 3, the Applicant's argues that spacing of Cluff's structure is contrary to the requirements set forth in claim 3. The Examiner respectfully disagrees. Cluff discloses substantially abutting adjacent support structures (40) that each have an elevation rotation axis parallel to and in a plane with the elevation rotation axis of the first support structure (32) in Figure 1.

FIG. 1



4. In regard to claims 4 and 11, the Applicant argues that Figures 2, 5, and 15 of Cluff and the Figure Genequand show that the incoming light is perpendicular to the lens and that the claim limitation of claim 4 and 11 required that the lens bend the light at an average non-zero angle. The Examiner respectfully disagrees. Figures 2 of Cluff and Figure 1 of Genequand show the incoming light is perpendicular, which reads on the claim limitation of the lens bending the light at a non-zero angle.

5. As to claims 7 and 13, the Applicant argues that none of the photovoltaic of Cluff is shown or describe as being below a surface plane of supporting bath. The Examiner respectfully disagrees. Figure 13 of Cluff, depicts the structure being partially disposed in the supporting bath/pool.

U.S. Patent Sep. 20, 1988 Sheet 4 of 6 4,771,764

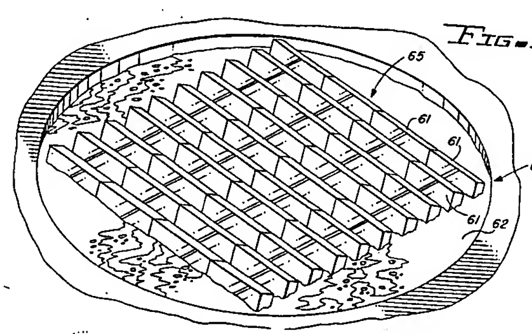


FIG-13

Cluff discloses incorporating a light source direction sensor within each pontoon (col.4; lines: 58-64).

7. All arguments directed toward the amended claim 15, and dependant claims 16-26, have been considered and have been addressed above.

In regard to claim 15, the Applicant argues that lens of Genequand is "a point focus lens" does not satisfy the requirement of claim 15. The Examiner respectfully disagrees. The lens as described in the claim limitation is the lens device (11) of Genequand comprised of an overall light-receiving region (11,19) configured to receive incident light along predefined paths in Figure 1, the overall light-receiving region (11,19) including a plurality of light-receiving sub regions/slats (39) that each receive incoming sub region/slats (39) light with a predefined relative density distribution along predefined paths (Figure 1), wherein each sub region/slats is configured to disperse the incoming sub region light with substantially uniform density over an entirety of a corresponding finite energy collection target region (col.2; lines:17-22). The lens of Genequand reads on the lens described in claim 15.

With respect to clams 5 and 6, the Applicant argues that Genequand hasno teaching whatsoever in respect of avoiding non-uniform illumination of operating photovoltaic conversion device due to shadowing.

The Examiner respectfully disagrees. Genequand et al. discloses the receiving region of the lens (11) with a shadow toleration mechanism (col. 2; lines: 6-23) that coordinates light entering through the lens with target photovoltaic conversion device to avoid substantially non-uniform illumination of

operating photovoltaic conversion devices due to such shadowing. Genequand et al. teaches that in order to obtain greater concentration of solar energy adjacent to the Fresnel lenses on each side, as set of reflective slates termed a slide assembly so as to reflect incident solar rays onto the same focus as the focus of the Fresnel lens, and are spaced from each other in such a way so as to not shadow the adjacent slide which is inclined at a slightly different angle (col.2; lines: 11-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Fresnel lens as a set of slats inclined at an angle of Genequand et al. to the solar conversion device of Cluff in order to obtain greater concentration of solar energy.

In regard to claim 6, the Applicant argues that Genequand does not suggest that each sub-region is configured to disperse the received light substantially uniform over an entire surface of the target photovoltaic conversion device.

The Examiner respectfully disagrees. Genequand et al. discloses a plurality of sub regions/slats (39) of the lens that each receive light substantially parallel (Figure 1) to the incoming light axis over a corresponding receiving sub region/slats (39), wherein each sub region/slat (39) is configured to disperse the received light substantially uniformly over an entire surface of at least one corresponding target photovoltaic conversion device/ inner conduit (27). Genequand et al. teaches that in order to obtain greater concentration of solar energy adjacent to the Fresnel lenses on each side, as set of reflective slates termed a slide assembly so as to reflect incident solar rays onto the same focus

as the focus of the Fresnel lens, and are spaced from each other in such a way so as to not shadow the adjacent slide which is inclined at a slightly different angle (col.2; lines: 11-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Fresnel lens as a set of slats inclined at an angle of Genequand et al. to the solar conversion device of Cluff in order to obtain greater concentration of solar energy.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Asha Hall whose telephone number is 571-

272-9812. The examiner can normally be reached on Monday-Thursday 8:30-7:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJH
AJH

Alexa Neckel
ALEXA D. NECKEL
SUPERVISORY PATENT EXAMINER